Salina de Ambargasta is a seasonal playa system located in subtropical South America (29°S). Together with other saline environments, Ambargasta occupies a topographically closed depression known as Cuenca Saliniana (Álvarez et al., 1990) in the broken foreland of the Sierras Pampeanas of Argentina. This type of broken foreland basin is characterized by successive basement uplifts produced by thick-skinned deformation throughout the Tertiary period (Jordan & Allmendinger, 1986 and Allmendinger et al., 1997). Regional and local tectonic settings play a main role generating orographic rainfall and, thus, contributing to the prevalence of a truly semiarid climate in the region (~500 mm/year). Present average low precipitation rates generate a mudflat-ephemeral lake complex. The sedimentary record of Ambargasta, therefore, is monitoring recent environmental changes providing a unique archive of the dominant climatic conditions that have fluctuated throughout the Quaternary, in the eastern Andes of central Argentina.

Combining geomorphology, instrumental data and satellite images analyses allowed the characterization of the different modern environments and its dynamics. At present, this multicomponent system shows major seasonal changes in the dynamics of the subenvironments that are ruled by the regional hydrology and climate. Dry mudflats (DM) occupy the highest western portions of the playa whereas the eastern low areas include ephemeral and intermittent lakes, ringed by clastic and saline mudflats (CM and SM). These lakes fill with brine during the early austral summer (December to March) and begin shrinking by evaporation by late summer where the subenvironment switch to CM and SM surfaces until the next rainy season.

The integrated study of the modern system provided an analogue to investigate older sediments. Thus, the saline mudflat (SM) and the clastic/dry mudflat boundary (CM/DM) were cored and studied using a quantitative multiproxy approach including petrophysical properties, microstratigraphy and both organic and inorganic geochemistry. Ongoing investigations include mineralogy analyses, stable isotope geochemistry and dating. Density variations can be clearly identified in both cored sites, however strong fluctuations mostly characterize the CM/DM environment. Water content correlates well with density probably caused by a variable content of evaporites. Sedimentary cores in both SM and CM/DM areas show very high magnetic susceptibility (MS) values with sharp fluctuations and a decreasing trend throughout depth. The sedimentary sequence consists mainly of brownish red and red massive clays, alternating with gray silty clay beds and yellow black mineral-bearing sands. Some levels are evaporite-rich (probably gypsum), either sand or clay-sized sediments. The high values in MS could be related to the reddish colour of the sediments indicating the presence of abundant iron-minerals. Organic matter and carbonates contents in SM and CM/DM environments are quite small although a relative enrichment can be observed in the CM/DM core.

These preliminary data indicate substantial changes in the hydrological budget that are shown by a conspicuous response of the sedimentary facies throughout the Late Quaternary record, which range from more clastic-dominated mudflats to ephemeral lake sediments. The results of ongoing mineralogical and geochemical analyses of the Ambargasta sedimentary record integrated within a well constrained chronological framework will allow us to unravel the environmental history of this system during the Late Quaternary. The further
combination of this record with results from similar studies stemming from this region of South America (e.g. Laguna Mar Chiquita, Piovano et al., 2002) will help to clarify the still controversial role of tropical regions during intervals of global reorganization in the climate system.

REFERENCES